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## Production directions of agricultural farms located in remote rural areas of Poland

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**Abstract:** *The strategy for rural development provides a differentiated approach to each type of rural areas. Particularly “sensitive” areas for rural development in Poland are remote rural areas, which are dominated by small farms with small economic strength. In many cases further agricultural development is very difficult or even impossible for these farms. For a lot of farms adapting to the current market situation is to determine the direction of production and the choice of management system. In this regard, organic farming seems to be a good alternative for those farms also given the significant financial support for the sector. Besides, organic farming also consistent with the paradigm of sustainable development - especially the concept of sustainable environmental development and protection of environmental heritage.*

**Keywords:** *remote rural areas, agricultural farms, organic farming, economic results.*

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### Introduction

Amongst all criteria that can be used for classification of rural areas an administrative, demographic, spatial and economic criteria can be specified. Due to administrative criteria 93% of Polish land could be defined as a rural area. In addition, according to statistical data over 50% of Poland’s area is represented by Utilized Agricultural Area (CSO, 2008). It follows that agriculture is an important element of rural areas in Poland. If we give the importance of agriculture in economic and professional activity in rural areas, we can distinguish three groups of rural areas (Wilkin, 2006): an integrated (close to major urban centers of minor importance in agriculture), intermediate (high importance of agriculture, specially with large areas) and remote rural areas (peripherals). The agricultural family farms in remote rural areas are rather small in the terms of area with small economic strength. These farms are described very often as a declining farms with economic size

below 8ESU. The problem of a relatively small and economically weak farms is one of the important issues of agriculture in Poland (Józwiak, 2009).

In Poland two main zone of remote rural areas can be specified (IGiPZ Sciences, 2009). They are located in Pomerania beyond the reach of Gdansk and Szczecin and in eastern Poland - Northeastern part of the Warmia and Mazury, Podlaskie, Lubelskie, Podkarpackie, Świętokrzyskie eastern part of the province. Significance of problems of these rural areas and changes in the face of dynamic changes after accession to the EU was highlighted in publications and scientific advices (Wilkin, 2006 and Kudłacz, 2006).

Besides, the OECD studies conducted in Poland at an angle of differences in economic and social development of the regions showed that there was a growing disparity between eastern Poland and the rest of the country as well as differences within individual provinces. It should be emphasized that this is not a single area - there is a very large variation in the direction of agriculture in these areas, very generally speaking northern areas of the eastern Poland are more focused on the production of milk while the southern part is focused on crops. But even within the region there are very large differences.

Polish eastern territories are not highly agricultural areas, however they are considered traditionally as agricultural areas in which family farms lead multilateral agricultural production mostly for own family consumption – they are so-called self-supplied farms. Unfortunately, agricultural incomes are not the main source of income in these farms. In the first place are the social transfers and benefits of social protection system, pensions and income from work outside agriculture.

The way of agricultural activity in eastern part of Poland is often very traditional in its nature and very similar to the method of organic farming. For many eastern Polish farms it could be a good alternative, especially given the other advantages and benefits when compared to intensive conventional farming. Summary of basic differences between conventional and organic farming are shown in Table 1.

**Table 1. Basic differences of conventional and organic system of farming**

<b>Conventional farming</b>	<b>Organic farming</b>
management focused on individual production (specialized monocultural production)	whole farm management (balance of plant&animal production)
maximum production output - intensive production	optimal production output - extensive production
higher costs of production	lower costs of production
low level of production control	whole farm controlling system
use of chemicals and syntetics	high limitation or lack of chemicals and lack of syntetics
environmental exploitation and contamination	environmental protection (water, soil, natural landscape, biodiversity)
use GMO	no GMO allowed

Probable directions of rural development (according to guidelines for the strategy of rural development and agriculture) include increasing the competitiveness of agricultural production in rural areas by reducing the cost of agricultural production (not only the direct cost of the agricultural production). The straight line in response to this trend is that organic farming is characterized by a reduction in production costs compared to conventional production. Organic farming also fits in a direction for rural development with environmental functionality – increasing the value of landscape, water and soil protection, maintenance of the biodiversity. But there is a question if the organic farming could be sufficiently profitable to continue agricultural production in remote rural areas at all? The comparison of economic results of production in conventional and organic farms in remote rural areas could bring us closer to the answer.

### **Objective, the source of data and research methodology**

Firstly the location for agricultural farms in the rural areas in eastern part of Poland was selected. The farms conventional and organic were located in 6 voivodships of that region: warmińsko-mazurskie, podlaskie, lubelskie, świętokrzyskie, podkarpackie i małopolskie. In case of organic farms only the certified organic farms were taken into account.

The analysis was based on data from two compatible systems: the Polish FADN and the AGROKOSZTY system. The survey sample included organic and conventional family farms in 2008. The selection of the survey sample of these farms was conducted purposefully, on the basis of the following characteristics:

1. In order to present the main directions of agricultural production in these farms, both conventional and organic the FADN data were used. On basis of FADN data the main directions of production in these farms were determined by the share of production value regarding crops and animal production.
2. In order to present possible competitiveness of the economic results of main production's directions of organic farms, they were compared with conventional farms.

Under the AGROKOSZTY system, the methodology used for calculating the standard gross margin was consistent with the EU rules (Augustynska, Goraj, Tarka, Pokrzywa, Skarżyńska 2000). It is the first income category, calculated by deducting from the value of production the corresponding direct costs. Moreover, records of unpaid and paid labour input related to the surveyed activity were kept in the AGROKOSZTY system, which allow to determine the corresponding labour input during the accounting year. The income from activity account was based on the Polish FADN information collected from the same farm (e.g. indirect costs, the annual average number of animals). The analysis of particular activity performed in farm concerned the total costs involved, the share of subsidies in income from activity and labour intensity.

## Results

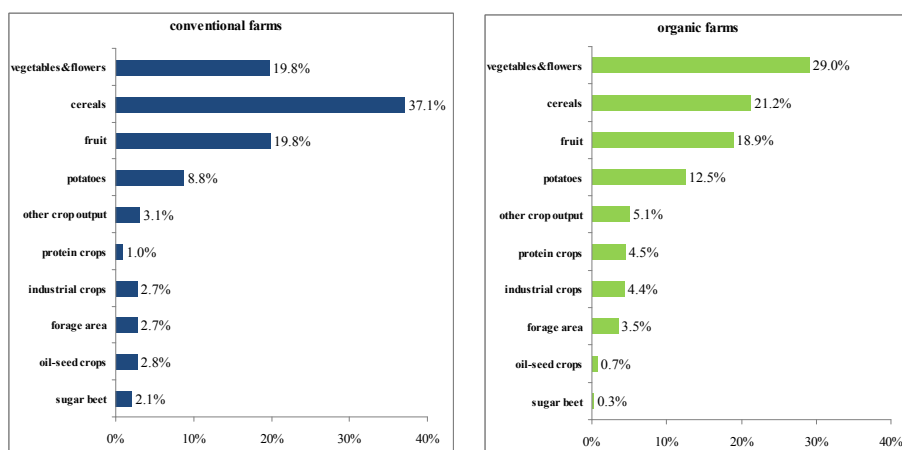
The tabular statement (table 2) shows the average data of selected conventional and organic farms. They both had nearly the same economic size and led production on the same UAA area. The differences were shown in the production results of the main crop and animal products. The average yield of wheat in organic farms was only 67% of the yield of wheat in conventional farms. The results of animal production were achieved in animal production yield of milk in organic farms was only 10% lower than in conventional.

**Table 2. Survey sample for analyzing main directions of agricultural production**

Specification	Average in agricultural farms	
	conventional	organic
Number of farms	1096	91
Economic size [ESU]	4.9	4.6
Total Utilised Agricultural Area [ha]	11	11.8
Rented UAA [ha]	2.2	1.2
Yield of wheat [dt]	47.5	31.8
Milk yield [kg per cow]	3719	3352

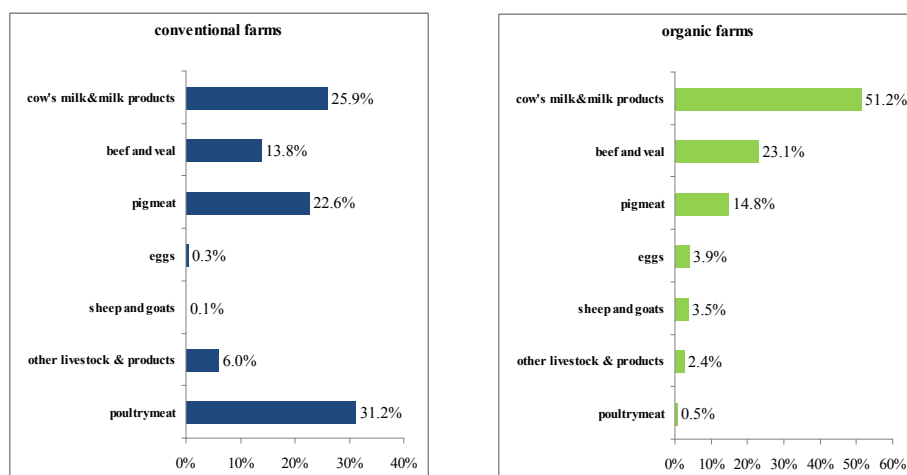
For analyzing the main directions of agricultural production the share in the total production value was calculated. In conventional farms the main role in crop production led the groups of products 'cereals', 'fruits' and 'vegetables&flowers'. The same situation was observed in surveyed organic farms.

The presentation of the share of agricultural productions in total production which are present in surveyed conventional and organic farms was shown on Fig.1 and 2.



**Fig. 1. Share of value of crop production in total crop production value in surveyed conventional and organic farms in 2008**

In case of the animal production in surveyed conventional farms the biggest share in total production value had 'poultrymeat', 'cow's milk and milk products' and 'pigmeat'. In surveyed organic farms 'cow's milk and milk products' was the lead direction of the animal production.



**Fig. 2. Share of value of livestock products in total livestock production value in surveyed conventional and organic farms in 2008**

The comparison of economic results of production in conventional and organic was based on data from AGROKOSZTY system. As a representative of cereals for analyzing economic results the winter rye and winter wheat were selected. Summary table and graphs (Table 3 and Fig. 3 and Fig. 3a) showed the production and economic results of these cereals in surveyed conventional and organic farms.

**Table 3. Specification of winter rye and winter wheat production's results in surveyed farms (based on AGROKOSZTY in 2008)**

Specification	Average in farms with winter rye		Average in farms with winter wheat	
	conventional	organic	conventional	organic
Number of analysed farms	35	19	32	14
Yield [dt/ha]	37.8	25.8	60.1	30.1
Sale price [EUR/dt]	12.7	21.9	13.0	23.7
Total labour input [hours]	10.2	11.6	15.2	16.5

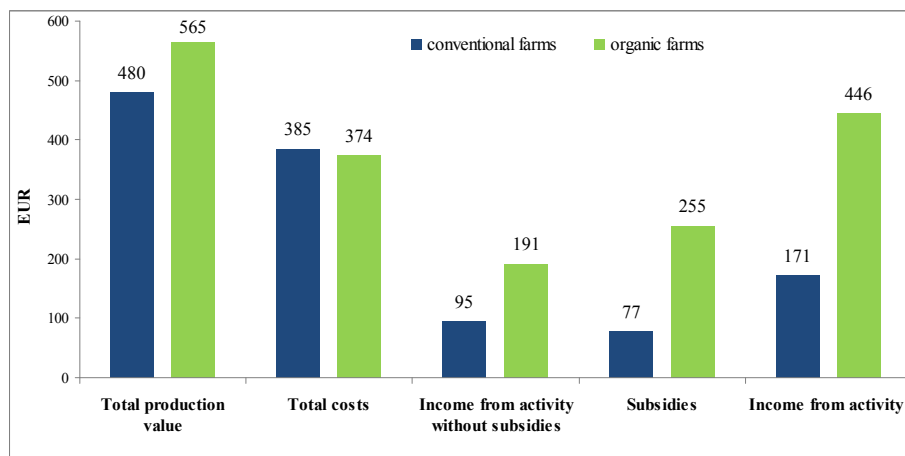


Fig. 3. Economic results of winter rye per ha of cultivation in 2008

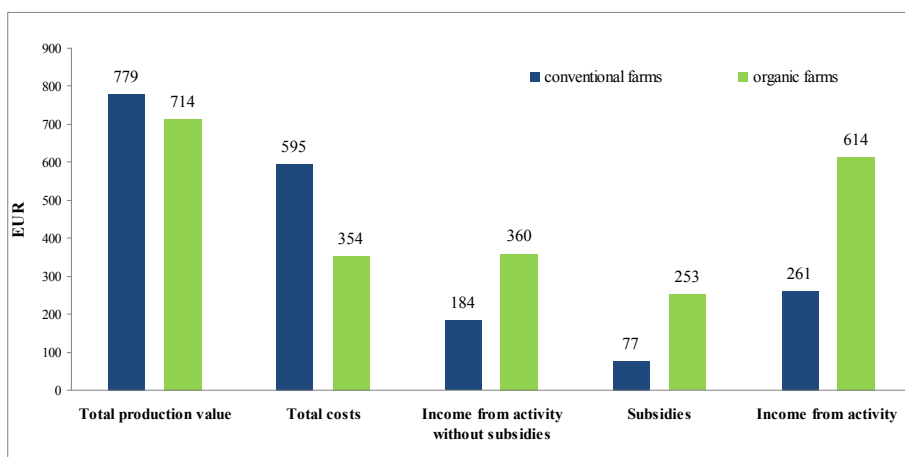


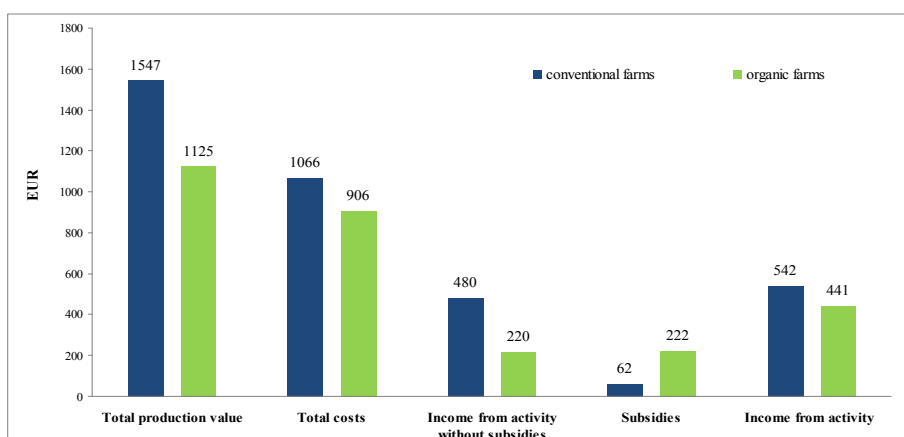
Fig. 3a. Economic results of winter wheat per ha of cultivation in 2008

The yield of organically produced cereals was much more lower than in conventional (from 40 to 50% lower) but the achieved price was about 70 to 80% higher for organic. The total cost of winter rye production was on the same level in organic and conventional cultivation. Winter rye seemed to be not so ‘demanding’ cultivation as the winter wheat. The total costs of conventional cultivation of winter wheat was almost twice more than costs of organic cultivation. Generally the cost of fertilizers used for conventional cultivation was the main reason of the higher cost. The income from activity (cereals production) even without subsidies was higher in organic farms but the share of subsidies was calculated from 41 to 57% of the income from activity. The total labour input was on the same level both in conventional and organic farms (see Table 1) so there was not significant differences on labour input involved in these cereals production.

The milk production was the leading animal production in surveyed organic and conventional farms. In surveyed organic farms the economic results of milk production was not satisfactory for farmers if compared to economic results of conventional production. This situation was because of lower number of dairy cows and lower milk yield. Even due to larger forage area per dairy cow utilized in surveyed organic farms the production results were lower because of the lower quality of that area compared with conventional farms. The amount of subsidies involved to dairy production improved significantly the income from activity (milk production). The details of results of milk production in surveyed conventional and organic farms was on Table 4. and Fig.4.

**Table 4. Specification of milk production's results in surveyed farms (based on AGROKOSZTY in 2008)**

Specification	Average in farms with dairy cows	
	conventional	organic
Number of analysed farms	52	25
Average annual number of dairy cows [heads]	10	7
Milk yield [litres/cow]	4793	3361
Sale price of milk [EUR/litre]	0.28	0.27
Total labour input [hours]	207.3	229.2



**Fig. 4. Economic results of milk production per dairy cow in 2008**

## Conclusions

On the basis of conducted analyses the main directions of agricultural production in surveyed farms were identified. Both in organic and conventional production cereals could be mainly specified for leading directions of plant production and dairy cows for animal production. Organic production of cereals led to higher income from activity both in winter rye and winter wheat in surveyed farms. Lower economic results of organic milk production were mainly due to lower production results – lower milk yield and lower number of dairy cows.



The share of subsidies in income from organic production was higher than in conventional farms and strongly influencing the level of income from activities of described plant and animal production. Total labour input was higher in organic farms for all surveyed agricultural activities.

In general total costs of analyzed agricultural activities were lower in organic farms so the problem of reducing productions costs is not so important but the low scale of production on organic farms. The possibility of increasing the scale of organic production to ensure sufficient levels of income based only on agricultural production is limited and not economically justified e.g. the organic fertilizers are very expensive, there's a little chance to buy additional forage area for the dairy cows, etc. Indirectly in this meaning we can find a justification for organic production's support from public funds.

On the other hand in response to the increasingly higher requirements of the consumer high quality organic products are made in organic farms. Competitiveness of production results should fight for product quality - not just a cost-price competitiveness. Leadership should therefore be sought in differences in the production of putting on organic and regional products of high quality. Consumers expect high quality food, safe and produced with respect for the environment, low level of environmental degradation and the conservation of biodiversity. In this regard the organic production could be a good alternative for family farms in remote rural area also taking into account well economic results of organic production in comparison with conventional production.

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